Remarks

Claims 15 and 33 have been amended. Support for the foregoing claim amendments may be found throughout the specification. Specifically, support can be found, for example, at page 17, lines 17-20 . No new matter was added by way of this amendment. Claims 1-44 are pending in the present application. Claims 17-40 have been withdrawn from consideration.

Election/Restriction

Applicant acknowledges the Examiner's indication that she has made the restriction FINAL and that claims 41 and 44 are properly included in Group I.

Drawings

Applicant acknowledges the Examiner's acceptance of the formal figures submitted on May 10, 2002.

Claim Rejections – 35 USC § 112

Claim 7 stands rejected under 35 U.S.C. § 112, first paragraph, as allegedly not enabled. Applicant respectfully disagrees.

The Examiner argues that the application does not provide guidance as to how to determine whether a "probability of a state of a nucleotide" is "capable of accepting a bias." Office Action at page 3. Applicant respectfully submits that it is not the *probability* that is capable of accepting a bias, but rather the *step of determining*. This is apparent from the plain wording of step d): ". . . wherein *said determining a probability for each of said states* is capable of accepting a bias" (Emphasis added).

The Examiner has argued that, "[t]he specification does not provide or suggest what is the determinant for bias acceptance thus not enabling one of ordinary skill in the art to know what requirements must be met to qualify for acceptance." Office Action at page 3. The Federal Circuit has held that the claims must be read in light of the specification. *In re Marosi*, 710 F.2d 799 (Fed. Cir. 1983). One of ordinary skill in the art, in light of the specification, could readily

assess whether the step of determining is capable of accepting a bias, because that artisan need only ask whether the algorithm being used to perform the step of determining can accept the indicated bias as an input. If the algorithm can accept that bias, then it is capable of accepting a bias. If the algorithm cannot accept that bias, then it is not capable of accepting a bias. In light of this Applicant requests that this rejection be withdrawn.

Claims 1-16 and 41-44 stand rejected under 35 U.S.C. 112, first paragraph, as allegedly not enabled. Applicant respectfully disagrees.

The Examiner argues that the cited claims are enabled to the extent of four equations given in the specification and 4 particular bias values. Office Action, pages 3 and 4. The Examiner further argues that "the specification does not reasonably provide enablement for any method of computation for determining the above probabilities nor determining how much of a bias is used aside from the numbers indicated above." *Id.* at 4.

The specification, however, clearly teaches the use of many probability models and algorithms that can be used with the present invention. See, for example, page 19, lines 22-27, page 22, lines 16-17, and the Background. One of ordinary skill in the art, based upon the knowledge in the art and the teachings of the specification, could readily practice the full scope of the invention claimed. That the specification teaches preferred embodiments and not every possible embodiment is not determinative of whether the claims are enabled. It is well established that the specification preferably omits what is known in art. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986). Applicant disagrees with the Examiner's contention that "[t]he specification does not provide or suggest what any other substitutable methods of computation could be . . . ." One of ordinary skill in the art, using the teachings of the specification, could readily substitute any appropriate computational method with the embodiments taught in the specification.

As to the Examiner's contention that only four bias values are given, Applicant respectfully refers the Examiner to the paragraph beginning on page 20, line 15. The specification clearly indicates the range of possible biases, and further indicates preferred ranges. The statistical equations and examples provided further demarcate the possible bias values that can be used with the present invention, and in fact teach that the bias values should be

determined by the users of the disclosed method in accordance with the information available for a particular sequence that is being examined. One of ordinary skill in the art could readily assess which biases to use for the particular sequences of interest to him or her based upon these teachings.

As to the Examiner's contention that "the specification does not provide any guidance on the determination of how much bias is to be utilized," (Office Action at page 5) Applicant again refers the Examiner to the paragraph beginning on line 15 of page 20, where the specification clearly teaches the use of bias values. In light of this, Applicant requests that this rejection be withdrawn.

As to the Examiner's argument that "the specification does not specify how to 'bias the state probabilities in favor of the coding states'", (Office Action at page 5) Applicant refers the Examiner to Page 20, lines 28-30, where the specification clearly teaches how to favor the probability of any particular state.

As to the Examiner's statement that "[n]owhere in the specification are the limitations of any biases such as 'greater than 1.1' . . . disclosed," (Office Action at page 5), Applicant refers the Examiner to page 21, line 6, where the quoted range is clearly disclosed.

In light of the above, Applicant requests that this rejection be withdrawn.

Claims 1-16 and 41-44 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite. Applicant respectfully disagrees.

Claims 1-16 and 41-44 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite for their use of the phrase "based upon." Applicant disagrees that this phrase is indefinite because, in light of the detailed computational methods given in the specification, one of ordinary skill in the art could readily assess how the determining in step d) is based upon the probability and the bias. Claims are not read in a vacuum. *In re Marosi*, 710 F.2d 799 (Fed. Cir. 1983).

Claims 4 and 13 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite for their use of the phrase "the middle nucleotide". Applicant disagrees that this phrase renders the claim indefinite. Because *only* one nucleotide in the referenced sequence can be the middle

nucleotide, it is definitely *the* middle nucleotide. Said differently, it would make no sense to refer to the middle nucleotide as "a middle nucleotide" when there is only one middle nucleotide.

Claim 7 stands rejected under 35 U.S.C. § 112, second paragraph as indefinite for use of the word "capable." As discussed above in detail, "capable" is not indefinite because one of ordinary skill in the art could readily ascertain whether the "determining" step is capable of accepting a bias.

Claims 1, 7, and 43 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite due to their "lack of clarity." The Examiner gives the example that, in claim 1, "steps (a) and (b) determine two different probability values that are ignored in step (d)." Office Action at page 6. Applicant disagrees that there is a lack of clarity in the rejected claims because the probabilities referred to in steps a) and b) are not expressly recited in step d). Applicant is unaware of any statutory requirement to refer to earlier steps in the final step of a method claim. Each step is clear, and the combination of steps is definite. Applicant respectfully requests that the Examiner either withdraw this rejection or indicate more clearly the basis for the rejection.

Claims 3 and 11 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite for their use of f, S P_f, P_i and Φ. Applicant again notes that the claims must be read in light of the specification. The terms f, S P_f, P_i and Φ are all clearly defined and used in the specification (see, for example, the Examples), and one of ordinary skill in the art would have no difficulty in determining their metes and bounds.

Claims 8-16 and 44 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite for their use of the phrase "for said window for said nucleotide". Neither claim 8 nor claim 44 uses the language quoted by the Examiner, however, and this rejection is therefore improper.

Claims 6, 15, and 16 stand rejected under 35 U.S.C. § 112, second paragraph as indefinite for their use of numbers. Claims 6 and 16 indicate values for the bias, which requires no units. None can therefore be given. In order to facilitate prosecution, claims 15 and 33 have been amended to incorporate the word "nucleotides", thereby obviating the rejection.

Claim 15 stands rejected under 35 U.S.C. § 112, second paragraph as indefinite for its use of the phrases "of about" and "to about". The MPEP clearly indicates that such use of "about" is permissible and is "clear, but flexible." See MPEP § 2173.05(b).

In light of these arguments and amendments, Applicant requests that the above rejections be withdrawn.

Claim Rejections – 35 USC § 102

Claims 1, 4, 5, 7-9, 12, 13, 15, and 41-44 stand rejected under 35 U.S.C. 102(b) over Borodovsky. Applicant respectfully disagrees.

In order for a reference to anticipate a claim under 35 U.C.S. 102(b), each and every element of that claim must appear in a single art reference. *PPG Industries, Inc. v. Guardian Industries Corp.*, 75 F.3d 1558 (Fed. Cir. 1996). Claims 1, 8, and 41-44 include the step of "determining a probability . . . based upon . . . a bias". Claim 7 includes the phrase, "capable of accepting a bias". The Examiner has not indicated where in Borodovsky this element of the rejected claims occurs, and, lacking such indication, Borodovsky cannot anticipate the claimed invention. That is, Borodovsky cannot be used as a reference to anticipate either a claim that bases a probability determination on a bias or a claim that includes an algorithm that is capable of accepting a bias when the Examiner has not indicated that Borodovsky even suggests the use of bias, much less discloses such use.

The Examiner contends that "the reference anticipates the instant invention whereupon 'a bias of 1 for all coding states' (p. 24, last sentence) is applied." Office Action at page 7. Applicant directs the Examiner's attention to the remainder of the quoted sentence, which concerns Equation V, which "uses a bias of 1 for all coding states, *and a bias of 0 for all noncoding states.*" Specification, page 24, lines 24-25, emphasis added. The Examiner has not indicated where Borodovsky teaches or suggests the use of *any* bias. In the particular embodiment cited by the Examiner, *two* values of bias for coding and noncoding states are given, which Borodovsky neither teaches nor suggests.

In light of the foregoing, Applicant requests that this rejection be withdrawn.

Supplemental Information Disclosure Statement

Applicant notes that an initialed and signed copy of the 1449 form accompanying the Supplemental Information Disclosure Statement that was submitted on November 9, 2000 listing

one reference has not yet been received. Applicant respectfully requests that the Examiner

initial, sign, and return the above-referenced 1449 form in her response to this Amendment.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or

rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all

presently outstanding objections and rejections and that they be withdrawn. Applicant believes

that a full and complete reply has been made to the outstanding Office Action and, as such, the

present application is in condition for allowance. If the Examiner believes, for any reason, that

personal communication will expedite prosecution of this application, the Examiner is invited to

telephone the undersigned at the number provided.

Respectfully submitted,

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Version with markings to show changes made

In the claims:

15. (Once Amended) The method of claim 8, wherein said window is about 75 to about 125 nucleotides.

33. (Once Amended) The method of claim 29, wherein said window is about 75 to about 125 nucleotides.